



PATENT

Docket No. 1232-4495US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : SHIOMI

Serial No. : 10/693,901 **Art Unit :** 2851

Filed : October 28, 2003 **Examiner :** Unassigned

For : IMAGING APPARATUS, CONTROL METHOD, AND A
COMPUTER PROGRAM PRODUCT HAVING COMPUTER
PROGRAM CODE THEREFOR (As Amended)

PRELIMINARY AMENDMENT

Mail Stop
Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter the following Preliminary Amendment in the above-referenced
divisional application prior to examination on the merits.

Amendments to the Claims are reflected in the listing of claims, which begin on
Page 2 of this paper.

Remarks begin on Page 8 of this paper.

AMENDMENTS TO THE CLAIMS

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Please rewrite the claims as follows:

Claims 1-23 (Canceled)

24. (Currently Amended) An imaging apparatus ~~which comprises~~
having an imaging unit for forming which forms an object image, and
~~generating~~ generates an image signal by photoelectric conversion, ~~an~~
~~optical shift unit for optically shifting an imaging position of the object~~
~~image in said imaging unit, generation means for generating a generator~~
which generates a single image from a plurality of images obtained by ~~said~~
~~imaging unit by a plurality of shifts using said optical shift unit, and the~~
imaging unit, and a storage means for converting an unit which converts
the image obtained by said imaging by the imaging unit or the image
generated generator by said generation means into a predetermined
designated data format, and ~~storing the~~ stores the converted image in a
storage medium, said apparatus comprising:

a detector, arranged to detect detection means for detecting spatial
frequency characteristics of the object of the image obtained by the
imaging unit; and

a controller, arranged to designate the data format and control
~~means for setting a shift method of photographing using said optical shift~~
~~unit~~ supply of an image to the storage unit in accordance correspondence
with the detected spatial frequency characteristics ~~of the object.~~

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25. (Currently Amended) The apparatus according to claim 24, wherein ~~said detection means detects the characteristics of the object on the basis of spatial frequency characteristics of an image of the object obtained by said imaging unit~~ the data format includes image compression.

26. (Currently Amended) The apparatus according ~~to claim 25 to~~ claim 24, wherein ~~said detection means~~ detector ~~detects the characteristics of the object on the basis of high-frequency components in units of color components of the image of the object~~ obtained by the imaging unit.

27. (Currently Amended) The apparatus according ~~to claim 26 to~~ claim 24, wherein ~~said control means sets different shift methods in correspondence with a comparison result of the high frequency components in units of color components contained in~~ detector detects characteristics of an object based on the image of the object obtained by the imaging unit.

28. (Currently Amended) The apparatus according ~~to claim 27 to~~ claim 24, further comprising:

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an optical shifter, arranged to optically shift an imaging position of
the object image in the imaging unit; and

a corrector, arranged to correct an influence of vibration on said
apparatus using said optical shifter,

~~wherein assuming that P represents a pixel pitch in X and Y~~
~~directions, which are perpendicular to each other, of said imaging unit,~~
~~when the image of the object has characteristics including many green~~
~~high frequency components, said generation means captures the generator~~
~~drives said optical shifter via said corrector to capture the plurality of~~
~~images used for generating the single image by first photographing,~~
~~second photographing upon image position shifting by P in the X-~~
~~direction, third photographing upon imaging position shifting by P/2 in~~
~~the X direction and P/2 in the Y direction, and fourth photographing upon~~
~~imaging position shifting by P in the X direction.~~

29. (Currently Amended) The apparatus according to ~~claim 28 to~~
claim 24, wherein ~~when the image of the object has characteristics~~
~~including many red or blue high frequency components, said generation~~
~~means captures the plurality of images used for generating the single~~
~~image by first photographing, second photographing upon imaging~~
~~position shifting by P in the X direction, third photographing upon~~
~~imaging position shifting by P in the Y direction, and fourth~~

~~photographing upon imaging position shifting by P in the X direction~~
said controller executes the designation and the control in consideration of
a free storage capacity of the storage medium.

30. (Currently Amended) An imaging method for an imaging apparatus ~~which comprises~~ having an imaging unit ~~for forming which forms~~ an object image, ~~and generating an image signal and generates an image by photoelectric conversion, an optical shift unit for optically shifting an imaging position of the object image in said imaging unit, generation means for generating a generator which generates a single image from a plurality of images obtained by said imaging by the imaging unit by a plurality of shifts using said optical shift unit, and storage means for converting an , and a storage unit which converts the image obtained by said imaging the imaging unit or the image generated by said generation means into a predetermined generator into a designated data format, and storing the converted stores the converted image in a storage medium, the method comprising the steps of:~~

detecting spatial frequency characteristics of the object of the image obtained by the imaging unit; and

designating the data format setting a shift method of photographing using said optical shift and controlling supply of an image to the storage

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unit in ~~accordance~~ correspondence with the detected characteristics of the object.

31. (Currently Amended) A computer program product ~~comprising~~ stored on a computer readable medium ~~having~~ comprising computer program code, for executing imaging processing of an imaging apparatus having an imaging unit ~~for forming~~ which forms an object image, and ~~generating~~ generates an image signal by photoelectric conversion, an ~~optical shift unit for optically shifting an imaging position of the object image in said imaging unit, generation means for generating a generator which generates a single image from a plurality of images obtained by said imaging unit by a plurality of shifts using said optical shift unit by the imaging unit, and a storage means for converting an unit which converts the image obtained by said imaging by the imaging unit or the generator image generated by said generation means into a predetermined designated data format, and storing stores the converted image in a storage medium, said product~~ the method comprising the steps of:

~~detecting procedure code for detecting~~ spatial frequency characteristics of the ~~object~~ image obtained by the imaging unit; and
~~designating the data format setting procedure code for setting a shift method of photographing using said optical shift and controlling~~

supply of an image to the storage unit in accordance ~~correspondence~~ with
the detected spatial frequency characteristics ~~of the object~~.

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32. (New) The apparatus according to claim 29, wherein said controller designates a data format with a high compression rate and supplies the image obtained by the imaging unit to the storage unit irrespective of a photographing mode set by an operation unit, when the free storage capacity of the storage medium is not more than a predetermined value.

33. (New) The method according to claim 30, wherein in the designated and controlling step, the designation and the control are executed in consideration of a free storage capacity of the storage medium.

34. (New) The method according to claim 33, wherein when the free storage capacity of the storage medium is not more than a predetermined value, a data format with a high compression rate is designated, and the image obtained by the imaging unit is supplied to the storage unit irrespective of a photographing mode set by an operation unit.